REPORT

545 E. Algonquin Rd., Arlington Heights, IL 60005

Project No. G101518786 Date: April 22, 2014

REPORT NO. 101518786CHI-020

TEST OF ONE 24 INCH AMBIANCE GLYDE LED MODULE

MODEL NO. 98835S-12
LED MODEL NO. NICHIA NS2L757AT-V1

RENDERED TO

GENERATION BRANDS
7400 LINDER AVENUE
SKOKIE, IL 60077

TEST: Electrical and Photometric tests as required to the IESNA test standard.

STATEMENT OF LIMITATION: This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

AUTHORIZATION: The testing performed was authorized by signed quote number 500506211.

STANDARDS USED: The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen:

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

ANSI NEMA ANSLG C78.377: 2012: Specifications of the Chromaticity of Solid State Lighting Products

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number 98835S-12. The sample was received by Intertek on April 8, 2014, in undamaged condition and one sample was tested as received. The sample designation was 04082014013356.

DATES OF TESTS: April 16, 2014 through April 21, 2014.

SUMMARY

Model No.:	98835S-12
Description:	24 Inch Ambiance Glyde LED Module

	Result	
Criteria	Sphere	Goniometer
Total Lumen Output (Lumens)	1099	1113
Total Power (W)	25.58	26.49
Luminaire Efficacy (LPW)	42.96	42.02

Criteria	Result
Power Factor	0.959
Current ATHD %	23.17
Correlated Color Temperature (CCT - K)	2976
Color Rendering Index (CRI - Ra)	95.2
Color Rendering Index (CRI - R9)	67.5
DUV	0.001
Chromaticity Coordinate (x)	0.437
Chromaticity Coordinate (y)	0.401
Chromaticity Coordinate (u')	0.252
Chromaticity Coordinate (v')	0.520

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU
3 Meter Sphere	SPR600	CHI0088	VBU	VBU
Elgar AC Power Supply	CW1251M	146112	VBU	VBU
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU
Newport Humidity Recorder	iTHX-SD	146382	08/26/13	08/26/14
Yokogawa Power Meter	WT1600	146768	01/16/14	01/16/15
Omega Temperature Meter	MDSi8	146139	04/02/14	04/02/15
Yokogawa Power Meter	WT210	146919	09/06/13	09/06/14
Omega Thermometer	DPI8-C24	146920	12/04/13	12/04/14
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
Newport Hygrometer	iServer	146956	01/02/14	01/02/15
Elgar, AC Power Supply	CW1251P	146918	VBU	VBU
Cole-Parmer Triple Timer	94440-00	CHI0041	04/01/14	04/01/15

TEST METHODS

Seasoning in Sample Orientation – LED Products

No seasoning was performed in accordance with IESNA LM-79.

Photometric and Electrical Measurements – Integrating Sphere Method

A Labsphere Model CDS 1100 CCD Array Spectroradiometer and Two Meter or Ten Foot Sphere was used to measure correlated color temperature, chromaticity coordinates, and the color rendering index for each SSL unit.

Ambient temperature was measured at a position inside the sphere. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation. Each SSL unit was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa Power Analyzer.

The calibration of the sphere photometer-spectroradiometer system is traceable to the National Institute of Standards and Technology.

Photometric and Electrical Measurements – Distribution Method

A LSI Type C High Speed Model 6440 Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for each sample.

Ambient temperature was measured equal to the height of the sample mounted on the Goniometer equipment. Each sample was operated at input rated voltage in its designated orientation. Each sample was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa Power Analyzer.

Some graphics were created with Photometrics Plus software.

RESULTS OF TEST

Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) - Integrating Sphere Method

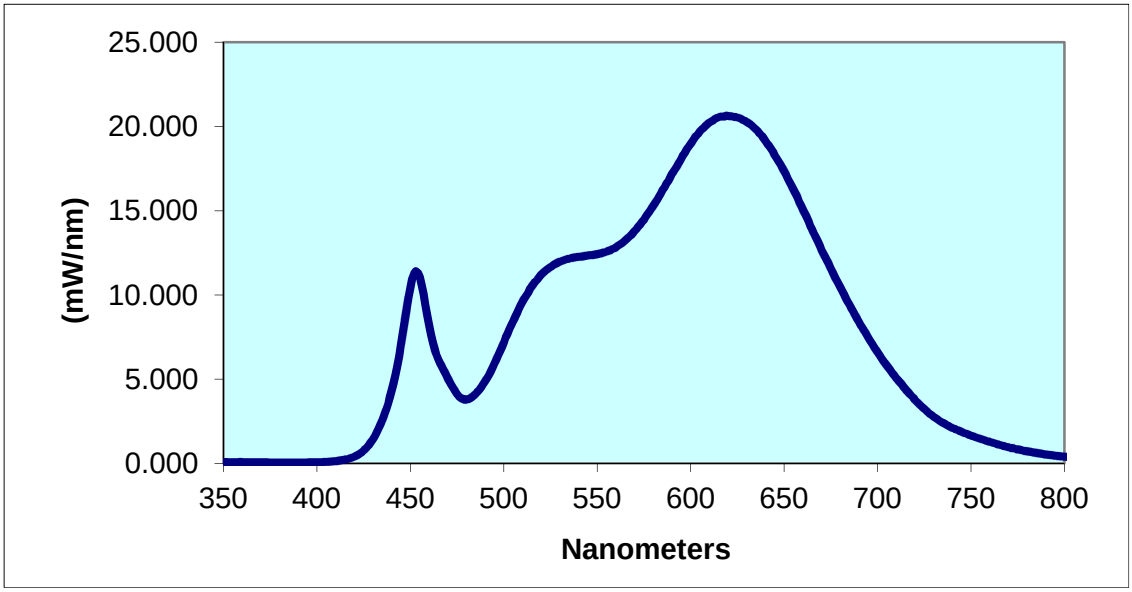
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
04082014013356	UP	12.0	2222	25.58	0.959	23.17	1099	42.96

Correlated Color Temperature (K)	CRI -Ra	CRI -R9	DUV	CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
2976	95.2	67.5	0.001	0.437	0.401	0.252	0.520

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.06	440	4.323	530	11.98	620	20.62	710	5.06
355	0.064	445	7.048	535	12.15	625	20.54	715	4.388
360	0.068	450	10.46	540	12.26	630	20.26	720	3.771
365	0.06	455	11.07	545	12.34	635	19.83	725	3.228
370	0.059	460	8.212	550	12.41	640	19.17	730	2.768
375	0.052	465	6.162	555	12.57	645	18.3	735	2.403
380	0.049	470	5.06	560	12.82	650	17.33	740	2.104
385	0.045	475	4.096	565	13.23	655	16.26	745	1.862
390	0.046	480	3.785	570	13.78	660	15.09	750	1.648
395	0.052	485	4.13	575	14.47	665	13.89	755	1.447
400	0.062	490	4.853	580	15.3	670	12.69	760	1.27
405	0.082	495	5.911	585	16.22	675	11.55	765	1.106
410	0.125	500	7.169	590	17.16	680	10.46	770	0.951
415	0.206	505	8.451	595	18.09	685	9.41	775	0.821
420	0.385	510	9.56	600	18.97	690	8.4	780	0.707
425	0.756	515	10.5	605	19.73	695	7.468		
430	1.423	520	11.19	610	20.23	700	6.588		
435	2.575	525	11.66	615	20.55	705	5.796		

Spectral Data Over Visible Wavelengths



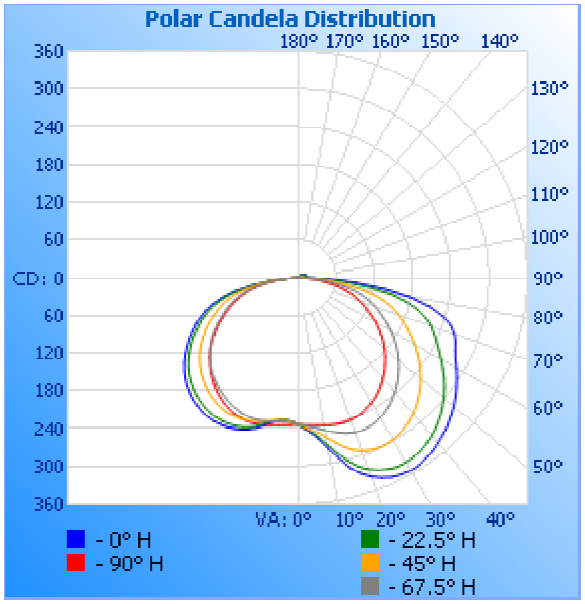
RESULTS OF TEST (cont'd)

Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens Per Watt)
04082014013356	UP	12.0	2299	26.49	0.959	1113	42.02

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	233	233	233	233	233
5	249	246	242	238	235
10	275	270	258	246	238
15	312	301	278	256	241
20	337	324	293	262	241
25	350	336	298	262	238
30	354	339	298	258	230
35	351	336	292	249	221
40	342	327	282	237	208
45	332	315	268	223	194
50	319	299	252	206	178
55	304	280	233	188	160
60	287	260	211	168	140
65	272	240	189	148	121
70	261	222	167	127	100
75	235	194	139	103	78
80	179	146	99	70	50
85	92	75	50	32	20
90	19	17	11	5	1
95	13	12	8	4	1
100	13	12	8	4	2
105	13	12	8	3	2
110	13	12	5	3	2
115	8	6	5	3	2
120	7	6	5	4	2

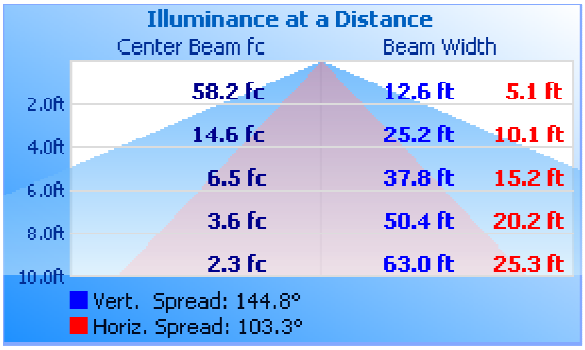


RESULTS OF TEST (cont'd)

Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



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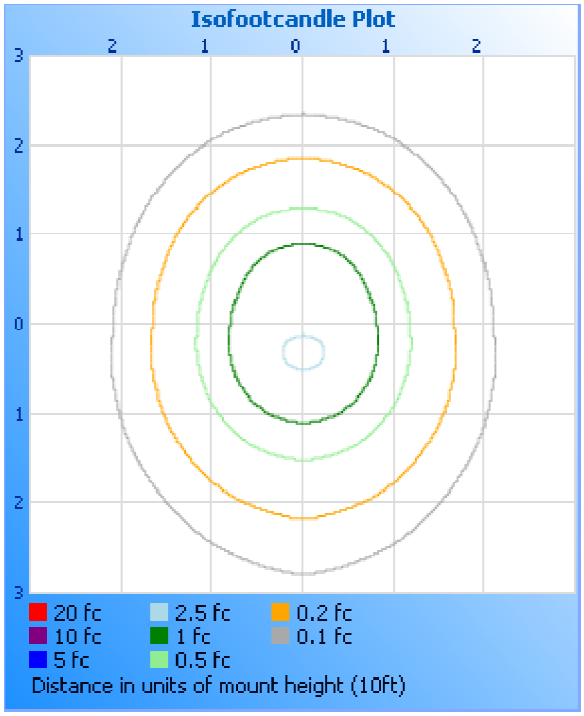

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	221.3	19.9
0-40	385.8	34.7
0-60	759.0	68.2
60-90	340.2	30.6
0-90	1099	98.8
90-180	13.7	1.2
0-180	1113	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	22.8	2.1
10-20	73.5	6.6
20-30	125.0	11.2
30-40	164.5	14.8
40-50	186.1	16.7
50-60	187.0	16.8
60-70	168.5	15.1
70-80	128.2	11.5
80-90	43.4	3.9
90-100	4.8	0.4
100-110	4.4	0.4
110-120	3.4	0.3
120-130	1.2	0.1

PICTURE (not to scale)

CONCLUSION

The results tabulated in this report are representative of the actual test samples submitted for this report only. The data is provided to the client for further evaluation. Compliance to the referenced specification requirements was not determined in this report.

In Charge Of Tests:

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Report Reviewed By:

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Attachment: None